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(54) Credit and charge card processing systems

(57) In order to effect a transaction using a credit or charge card, the processing system establishes two-way communication via a network (14) between a retailer unit (12a) and a computer (20) and also between authorization data bases (16) at the credit or charge card companies and the computer (20). After the retailer's unit has identified itself and established contact with the computer system, the details of the purchase are entered at the retailer's terminal, and the customer's credit or charge card is interrogated in order to ascertain its validity and whether or not the "floor limit" or "credit limit" has been exceeded. On completion of a successful transaction, a ticket is printed out in duplicate at the retailer's terminal and the details of the completed transaction are stored for future reference.

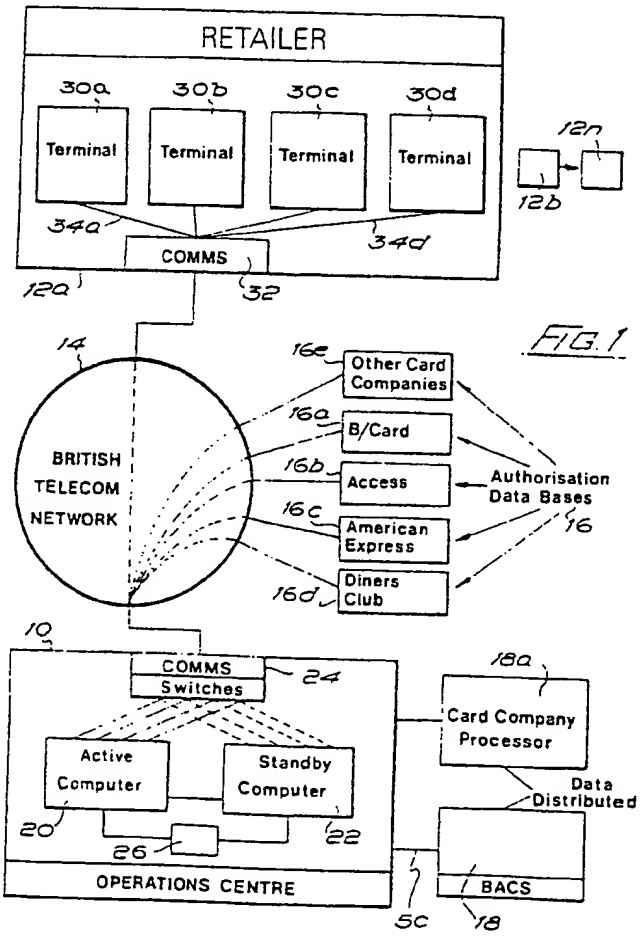

FIG. 1

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The drawing(s) originally filed was/were informal and the print here reproduced is taken from a later filed formal copy.

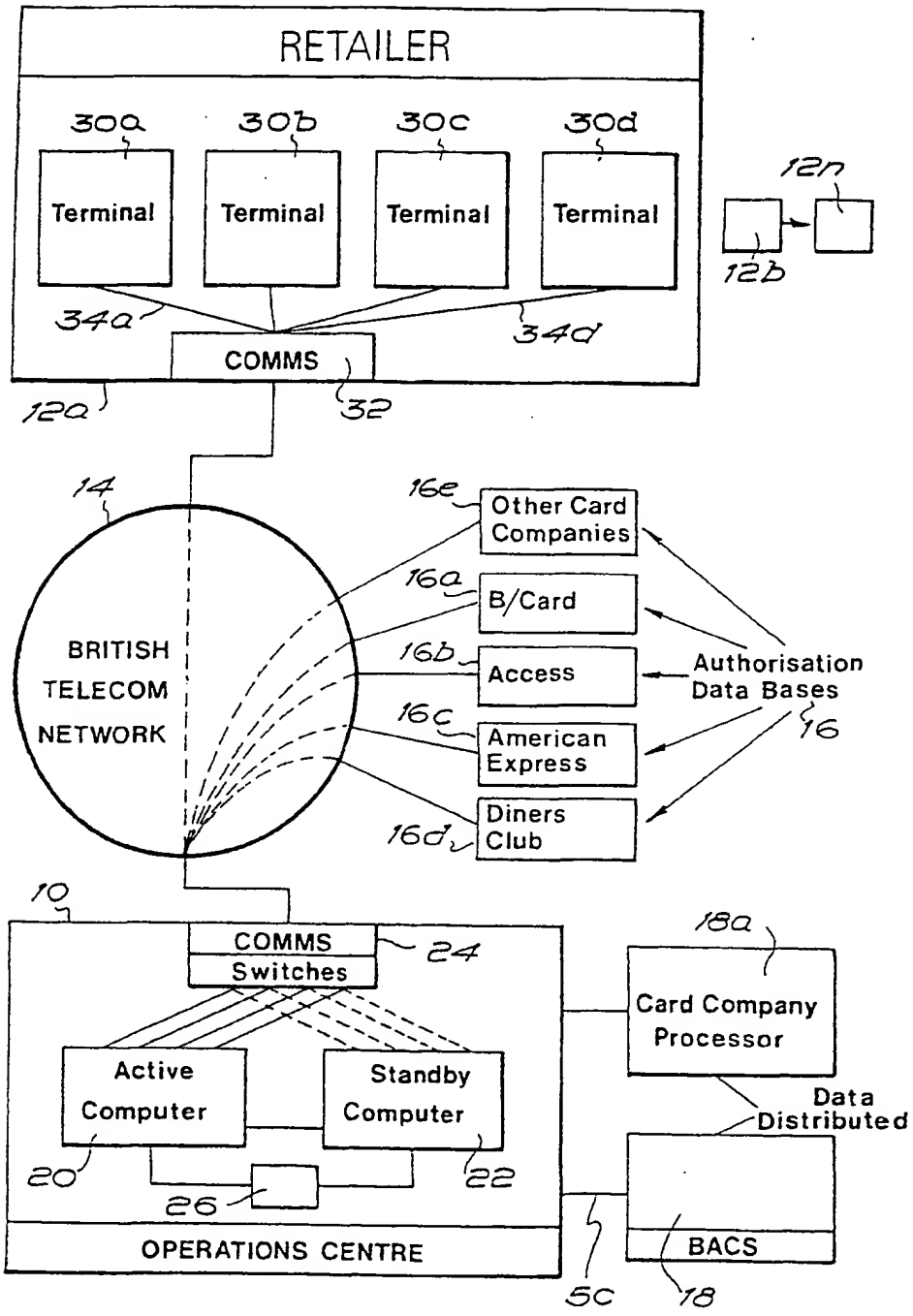
RETAILER
30a
30b
30c
30d
Terminal
Terminal
Terminal
Terminal
12n
12b
34a
34d
COMMS
12a
32
14
16e
Other Card Companies
16a
B/Card
16b
Access
16c
American Express
16d
Diners Club
Authorisation Data Bases
16
BRITISH TELECOM NETWORK
10
COMMS
Switches
24
18a
Card Company Processor
Active Computer
Standby Computer
Data Distributed
20
22
26
OPERATIONS CENTRE
BACS
5c
18

FIG. 1

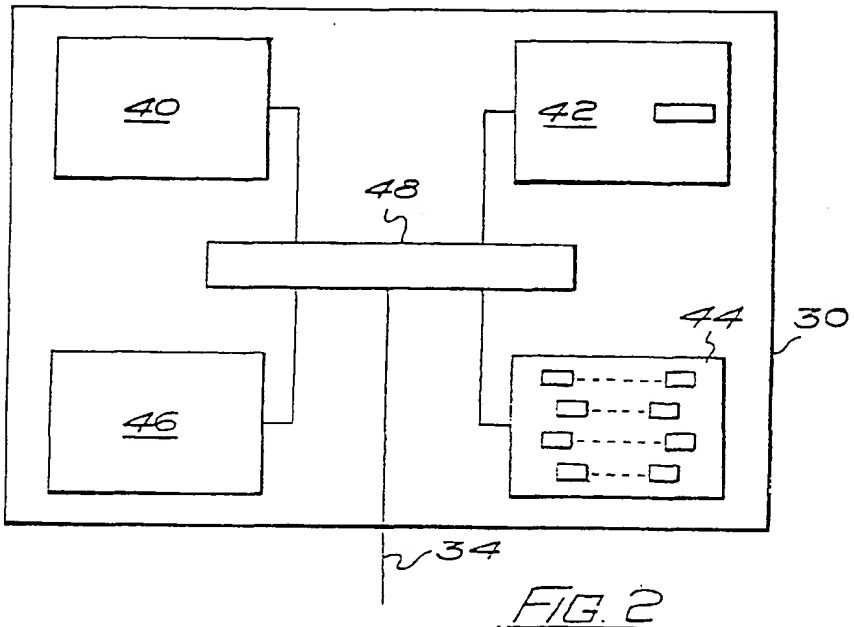

FIG. 2

SPECIFICATION

Improvements in credit and charge card processing systems

The present invention relates to a credit and charge card processing system and more particularly to a fully automatic and computerized credit and charge card processing system which has the ability to identify both the seller and buyer, check the validity of the credit and charge car, authorize and record the transaction.

With the present credit or charge card system, virtually all vouchers resulting from purchases using credit or charge cards have to be processed by hand and physically handled on a number of occasions in different locations. This involves a lot of additional work for the seller as well as the banks and the credit or charge card companies. Also losses caused by credit or charge card frauds are on the increase which is causing concern amongst all concerned. In addition merchants using credit or charge cards have to pay the card company or bank a commission on the sale.

It is thus an object of the present invention to overcome some or all of the above disadvantages and in particular to reduce the amount of paper work involved and the risk of fraud occurring.

According to one aspect of the present invention there is provided a method of processing a transaction involving a credit or charge card by means of a computer which can be linked to a terminal at a retailer's premises and a processing unit at the card company concerned, said method including the steps of:

(a) establishing a two-way communications link between the computer and the terminal at the retailer where a desired transaction is to be performed;

(b) identifying which retailer from a plurality of retailers is requesting a transaction to be conducted and also the particular terminal from a plurality of terminals housed within the retailer's premises;

(c) introducing the details of the transaction into the equipment associated at the terminal concerned;

(d) interrogating the credit or charge card of the customer which has been inserted into the equipment at the terminal;

(e) completing the transaction by printing out a ticket from the equipment at the terminal; and

(f) storing the whole transaction for the future reference.

Preferably, the ticket is printed in duplicate.

The method may comprise the additional step of searching in a negative file held at a data base associated with the computer to ascertain the validity of the card from information supplied by the credit or charge companies concerned.

The method may comprise the additional step of checking whether the total amount of the purchase exceeds the "floor limit" given to the retailer by the credit or charge card company concerned in the transaction.

The method may also include the further steps of:

passing the transaction data from the computer to data bases associated with the credit or charge companies concerned; scanning the files held at the data base of the credit or charge card company concerned for positive authorization; and transmitting the result of the scan both to the computer and the appropriate retail terminal.

According to a second aspect of the present invention there is provided a computerized credit or charge card processing system including:

(a) a computer system;

(b) a plurality of terminals located in groups associated with a plurality of retailers;

(c) a two-way communications link for enabling the computer system to be linked with a particular retailer's terminal and with data bases associated with the credit or charge card companies;

(d) means at the retailer's terminal for establishing contact with the computer system and identifying itself;

(e) means for entering details of the purchase at the retailer's terminal;

(f) means at the computer system for interrogating the customer's credit or charge card to ascertain its valitity;

(g) means at the retailer's terminal for printing out the completed transaction; and

(h) means at the computer system for storing the details of the completed transaction for future reference.

The computerized credit or charge card processing system may also include means for checking whether or not the total amount of goods purchased by the customer exceeds the "floor limit" set by the credit or charge card company at the retailer concerned or the "credit limit" imposed on the purchaser by the credit or charge card company.

In the event that either the "floor limit" or the "credit limit" have been exceeded, the means may be provided to enable the computer to obtain a special authorization from the card company concerned to complete the transaction.

A second or stand-by computer system may be provided for the system in the event that the first computer develops a fault.

The present invention will now be described in greater detail by way of example with reference to the accompanying drawing, wherein:

Figure 1 is a block diagram of one preferred form of credit or charge card processing system; and

Figure 2 is a block diagram showing the elements of one of the terminals of a retailer unit.

Referring to the drawing, the system basically comprises the following blocks: an operation centre 10; a plurality of retailer units 12a, 12b to 12n; as communications network 14 which may be a land-line or radio communications link; a plurality of credit or charge card authorization data bases 16, five of which 16a to 16e are shown; and processing computers operated by the credit or charge companies or a computer service bureau serving the credit or charge companies or banks shown diagrammatically as 18a and 18 respectively.

The operations centre 10 includes: an active computer system 20; a standby or auxiliary computer system 22 of similar capacity to the active computer system; an automatic communications exchange 24 to enable access to the active computer system 20 from any one or more of the retailer units 12 via the communications network 14; and an information storage device 26, for example a magnetic tape or magnetic disk for recording all transactions.

Both the active and standby computer systems 20 and 22 comprise a central processing unit and a plurality of disk drives.

Each retailer unit 12, may have a number of terminals 30 depending on the size of the retailer in question, each terminal being associated with a different department and/or floor of the store concerned. In the example illustrated the retailer unit 12a has four terminals 30a to 30d. Each terminal 30a to 30d is linked to an interface communications point 32 via lines 3a to 34d respectively. The interface point 32 enables specific terminals to be connected to the active computer system 20 via the communications network 14. Although only the retailer unit 12a is shown in detail, the other retailer units 12b to 12n are of similar construction, the number of terminals in each depending on the size of the retailer.

Referring now to Figure 2, it will be seen that each terminal 30 comprises the following components: a visual display unit 40; a journal printer 42; a keyboard 44; a card wipe mechanism 46; and an interface 48, through which the various components are connected to the active computer system 20 via the communications network 14.

The automatic communications exchange 24 in the operations centre 10 enables one or more communications links to be established between the retailer units 12 and the authorization data bases 16 for the purpose of enabling transactions to be performed. In addition the computer systems 20 and 22 in the operations centre 10 may be connected to the processing computers 18a operated by the credit or charge card companies through a preliminary established landline 50. Alternatively, the information can be transferred to the processing computers 18a by means of a tape. The standby computer system 22 is primarily provided in case of failure or malfunctioning of the main computer system 20.

Each terminal 30 when switched on to carry out a transaction performs a self-check operation which ensures that all components are operational.

The operation of the above described credit or charge card processing system will now be described in greater detail with regard to the purchase of goods from a store by a customer using a credit or charge card as a means of payment for those goods purchased.

When a purchase of one or more items of goods is to be transacted, the operator acting for the retailer switches on the associated terminal (but only for the first transmission of the day) e.g. terminal 30b in the retailer unit 12a. This switching on operation causes a code, transparent to the user, which identifies the particular terminal 30b, to be transmitted to the active computer system 20 to enable the computer system to identify that terminal. The operator then enters his own identity into the terminal by entering his code by using the keyboard 44. This is displayed on his VDU 40, so that he can check that he has entered the correct code. He then establishes a link with the active computer system 20 in the operations centre. The computer system then identifies from the codes transmitted which operator and which terminal of that retailer unit has established a connection for a transaction.

When the active computer system 20 has identified which retailer unit and which terminal of that retailer unit and which operator has established connection, it transmits back an acknowledgement signal, and may also send a message for the day which is to be printed on the duplicate ticket to be issued by the journal printer 42, together with the standard information which identifies the merchant, this information being stored in the terminal.

As soon as the acknowledgement signal has come through and displayed on the VDU 40 the operator can enter the amount or amounts of the individual goods which the customer is purcha'sing, by operating the appropriate keys on the keyboard 40. The printer then prints out on a duplicate ticket, the merchants name and address, the credit or charge card company account number, and the total of the goods to be purchased.

Once this has been completed, the VDU 40 displays "Please wipe card". The customers credit or charge card is then placed in an appropriate slot in the wipe mechanism 46 which then electronically "reads" the information held on track two of the magnetic stripe of the credit or charge card. This information plus the amount of the transaction is then

relayed to the active computer system 20. The active computer system then makes a search in a negative file held by the active computer system on behalf of that credit or charge card company in order to establish whether or not the particular card is listed by the credit or charge card company as being lost, stolen or deemed to be deliquent account. In the event that the search is negative, the printer 42 will print the card number, the type of card, date, time of transaction from the active computer system for the day. In code form it will also show the chain, location and/or department of the specific retailer. An authorization number for the transaction may also be printed. This will be followed by a print out of a signature area and the message for the day if used.

Thus far, the above operation assumes that the total purchase is either less than the "floor limit" imposed on the retailer by the credit or charge card company. In the event that the total purchase exceeds the "floor limit" the active computer system 20 will relay the credit or charge card number and the amount of the transaction to the appropriate authorization data base of the credit or charge card company. If the relevant authorisation data base clears the amount, the above procedure is the same. If not, then the whole purchase operation is terminated.

When the purchase transaction has been completed, the active computer system 20 will credit the retailer with the amount of the transaction and debit the credit card account of the customer with the same amount either via the processing computers 18a operated by the credit or charge card companies or the computer service bureau 18. The whole procedure of the transaction is recorded on the disks at the active and standby computers 20 and 22 which act as archives so that all transactions are recorded, and if needed may be accessed and analyzed by the appropriate card issuing companies if a dispute or query arises out of the transaction.

An additional feature of the above system allows a store manager or a distant head office to transmit information to each terminal in his store. For example, a store manager may wish to inform his terminal operators regarding special offers or reduced prices on certain items of merchandise. By issuing a special command which he can type into his terminal, all the other terminals in his store can display this information. This is possible as all the terminals are linked through the active computer system. It should be noted that no merchant may access another merchant's terminals.

It will be appreciated that the above described credit card processing system has the following advantages to offer to its users.

(a) It will substantially reduce all paperwork to the absolute minimum.

(b) It will provide a computerized archives for the particular retailers and merchants who use the system.

(c) It will make fraud almost impossible in view of the stringent checks carried out on customer's credit cards.

(d) It will reduce overall processing costs, thus enabling the credit card companies to reduce commissions paid by the retailers and merchants who participate in the scheme.

(e) It is easy to operate and requires only a minimum of maintenance to keep the system in operation.

(f) It is very fast and the system protocols eliminate operator errors.

CLAIMS

1. A method of processing a transaction involving a credit or charge card by means of a computer which can be linked to a terminal at the retailer's premises and a processing unit at the card company concerned, said method including the steps of:

(a) establishing a two-way communications link between the computer and the terminal at the retailer where a desired transaction is to be performed;

(b) identifying which retailer from a plurality of retailers is requesting a transaction into the equipment associated at the terminal concerned;

(c) introducing the details of the transaction into the equipment associated at the terminal concerned;

(d) interrogating the credit or charge card of the customer which has been inserted into the equipment at the terminal;

(e) completing the transaction by printing out a ticket from the equipment; and

(f) storing the whole transaction for future reference.

2. The method of processing a transaction according to claim 1, wherein the ticket is printed in duplicate.

3. The method of processing a transaction according to claim 1 or 2, wherein it includes the additional step of:

(g) checking whether the total amount of the purchase exceeds the "floor limit" given to the retailer by the credit or charge card company concerned in the transaction.

4. The method of processing a transaction according to any one of the preceding claims, wherein it includes the additional step of:

(h) searching in a negative file held at a data base associated with the computer to ascertain the validity of the card from information supplied by the credit or charge card companies concerned.

5. The method of processing a transaction according to claim 4, wherein it includes the further steps of:

(i) passing the transaction data from the computer to data bases associated with the credit or charge companies concerned;

(j) scanning the files held at the data base of the credit or charge card company concerned for positive authorization; and

(k) transmitting the result of the scan both to the computer and the appropriate retail terminal.

6. A computerized credit or charge card processing system including:

(a) a computer system;

(b) a plurality of terminals located in groups associated with a plurality of retailers;

(c) a two-way communications link for enabling the computer system to be linked with a particular retailer's terminal and with data bases associated with the credit or charge card companies;

(d) means at the retailer's terminal for establishing contact with the computer system and identifying itself;

(e) means for entering details of the purchase at the retailer's terminal;

(f) means at the computer system for interrogating the customer's credit or charge card to ascertain its validity;

(g) means at the retailer's terminal for printing out the completed transation; and

(h) means at the computer system for storing the details of the completed transaction for future reference.

7. A computerized credit or charge card processing system according to claim 6, wherein it includes means for checking whether or not the total amount of goods purchased by the customer exceeds the "floor limit" set by the credit or charge card company at the retailer concerned or the "credit limit" imposed on the purchaser by the credit or charge card company.

8. A computerized credit or charge card processing system according to claim 6 or 7, wherein there is provided means to enable the computer system to obtain a special authorization from the card company concerned to complete the transaction, in the event that either the "floor limit" or the "credit limit" have been exceeded.

9. A computerized credit or charge card processing system according to any one of the preceding claims 6 to 8, wherein a second standby computer system is provided in the event that the first computer system develops a fault.

10. A method of processing a transaction involving a credit or charge card by means of a computer which can be linked to a terminal at a retailer's premises and a processing unit at the credit card company concerned, substantially as herein described with reference to the accompanying drawing.

11. A computerized credit or charge card processing system, constructed substantially as herein described with reference to and as illustrated in the accompanying drawing.

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